AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (Currently Amended): A method of ~~diagnosing a~~ evaluating an effectiveness of a predetermined system improvement on steam loss reduction in a steam piping system and application of the improvement thereto, comprising the steps of:

determining a total receiving steam amount (Qi) which is a total amount of steam supplied to an evaluation target steam piping and a total necessary steam amount (Qo) which is a total amount of steam required by a steam-using device in the evaluation target steam piping or determining a difference between said total receiving steam amount ~~(Qi)~~ and said total necessary steam amount ~~(Qo)~~ as a total unknown steam amount (Qx = Qi −Qo) which is a total steam loss amount in the evaluation target steam piping;

determining a total amount of steam loss which can be solved by a predetermined system improvement in the evaluation target steam piping as a total improvable steam loss amount (Qx − Qxx);

based on said determined total amount~~s~~ of steam loss:

obtaining a ratio ((Qx − Qxx) / Qx) of said total improvable steam loss amount ~~(Qx − Qxx)~~ relative to the total unknown steam amount ~~(Qx = Qi − Qo)~~ which is the difference between the total receiving steam amount ~~(Qi)~~ and the total necessary steam amount ~~(Qo)~~ as an improvable unknown steam ratio (Kts = (Qx − Qxx) / Qx); or

obtaining a ratio (Qx / Qi) of the total unknown steam amount ~~(Qx)~~ relative to the total receiving steam amount ~~(Qi)~~ and a ratio (Qxx / (Qi − (Qx − Qxx))) of a total basis unknown steam amount (Qxx) relative to a value (Qi − (Qx − Qxx)) obtained by subtracting the total improvable steam loss amount ~~(Qx − Qxx)~~ from the total receiving steam amount ~~(Qi)~~ as an unknown steam ratio (Kx = Qx / Qi) and an improved unknown steam ratio (Kxx = (Qxx / (Qi − (Qx − Qxx)))), respectively, said total basis unknown steam amount (Qxx = Qx − (Qx − Qxx)) being a value obtained by subtracting said total improvable steam loss amount ~~(Qx − Qxx)~~ from said total unknown steam amount ~~(Qx)~~; or

obtaining a ratio (Qx / Qi) of the total unknown steam amount ~~(Qx)~~ relative to the total receiving steam amount ~~(Qi)~~ and a ratio (Qxx / Qi) of a total basis unknown steam amount (Qxx) relative to the total receiving steam amount ~~(Qi)~~ as an

unknown steam ratio ($Kx = Qx / Qi$) and an apparent improved unknown steam ratio ($Kxx' = Qxx / Qi$), respectively, said total basis unknown steam amount ($Qxx = Qx - (Qx - Qxx)$) being a value obtained by subtracting said total improvable steam loss amount ~~(Qx - Qxx)~~ from said total unknown steam amount ~~(Qx)~~;

evaluating via a system the effectiveness of the predetermined system improvement on the steam loss reduction on the basis of one of:

the improvable unknown steam ratio indicating the ratio of reduction in the total unknown steam amount realized by the predetermined system improvement;

the combination of the unknown steam ratio and the improved unknown steam ratio indicating the ratio of reduction in the total unknown steam amount realized by the predetermined system improvement; and

the combination of the unknown steam ratio and the apparent improved unknown steam ratio indicating the ratio of reduction in the total unknown steam amount realized by the predetermined system improvement; and

applying the predetermined system improvement to components of the steam piping system.

Claim 2 (Currently Amended):   The method ~~of diagnosing a system~~ according to claim 1, wherein the method further comprises a step of performing a trap operation diagnosis on a plurality of evaluation target steam traps mounted in the evaluation target steam piping;

based on a result of the trap operation diagnosis, calculating a total trap-passed steam loss amount (Qt'' or Qt) obtained by aggregating trap-passed steam loss amounts for the total number of evaluation target steam traps; and

using said total trap-passed steam loss amount ~~(Qt'' or Qt)~~ as the total improvable steam loss amount ($Qx - Qxx = Qt''$ or Qt) to obtain the improvable unknown steam ratio ($Kts = (Qx - Qxx) / Qx = (Qt'' / Qx)$ or (Qt / Qx)), or the unknown steam ratio ($Kx = Qx / Qi$) and the improved unknown steam ratio ($Kxx = (Qxx / (Qi - (Qx - Qxx)) = Qxx / (Qi - Qt'')$ or $Qxx / Qi - Qt)$), or the unknown steam ratio ~~(Kx = Qx / Qi)~~ and the apparent improved unknown steam ratio ~~(Kxx' = Qxx / Qi)~~.

Claim 3 (Currently Amended):   The method ~~of diagnosing a system~~ according to claim 1, wherein the method further comprises the step of performing a trap

operation diagnosis on a plurality of evaluation target steam traps mounted in the evaluation target steam piping and a steam leakage diagnosis for diagnosing steam leakage from respective piping portions of the evaluation target steam piping;

based on a result of the trap operation diagnosis, calculating a total trap-passed steam loss amount (Qt'' or Qt) obtained by aggregating trap-passed steam loss amounts for the total number of evaluation target steam traps;

based on a result of the steam leakage diagnosis, calculating a total steam leakage loss amount (Qs) obtained by aggregating steam leakage loss amounts from the respective piping portions; and

using a sum total steam loss amount ($Qts = Qt'' + Qs$) or ($Qt + Qs$)), which is a sum of said total trap-passed steam loss amount $(Qt''\text{ or }Qt)$ and said total steam leakage loss amount (Qs), as the total improvable steam loss amount ($Qx - Qxx = Qts$) to obtain the improvable unknown steam loss ratio ($Kts = (Qx - Qxx) / Qx = Qts / Qx = (Qt'' + Qs) / Qx$ or ($Qt + Qs$) / Qx), or the unknown steam ratio ($Kx = Qx / Qi$) and the improved unknown steam ratio ($Kxx = Qxx / (Qi - Qts) = Qxx / (Qi - (Qt'' + Qs))$ or $Qxx / (Qi - (Qt + Qs)))$, or the unknown steam ratio $(Kx = Qx / Qi)$ and the apparent improved unknown steam ratio $(Kxx' = Qxx / Qi)$.

Claim 4 (Currently Amended):   [[A]] The method of operating an aggregating system for system diagnosis having an inputting means and a calculating means, the method comprising the steps of according to claim 1, further comprising the step of:

operating an aggregating system for system diagnosis having an inputting means and a calculating means, wherein the steps for operating the aggregating system comprise the steps of:

receiving, by said inputting means, inputs of result of a trap operation diagnosis performed by a trap diagnotor for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an the evaluation target steam piping and inputs of a the total receiving steam amount (Qi) and a the total necessary steam amount (Qo) of the evaluation target steam piping or an input of a the total unknown steam amount $(Qx = Qi - Qo)$ which is a difference between the total receiving steam amount (Qi) and the total necessary steam amount (Qo) and is a total steam loss amount in the evaluation target steam piping;

calculating, by said calculating means and based on the result of the trap operation diagnosis inputted to the inputting means, a total trap-passed steam loss amount (Qt'' or Qt) obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps;

based on the total receiving steam amount ~~(Qi)~~ and the total necessary steam amount ~~(Qo)~~ or the total unknown steam amount ~~(Qx)~~ inputted to the inputting means:

calculating a ratio ((Qt'' / Qx) or (Qt / Qx)) of the total trap-passed steam loss amount (Qt'' or Qt) relative to the total unknown steam amount ~~(Qx)~~ which is the difference between the total receiving steam amount ~~(Qi)~~ and the total necessary steam amount ~~(Qo)~~, as an improvable unknown steam ratio ($Kts = (Qx - Qxx) / Qx = (Qt'' / Qx)$ or (Qt / Qx)); or

calculating ~~a~~ the ratio ~~(Qx / Qi)~~ of the total unknown steam amount ~~(Qx)~~ relative to the total receiving steam amount ~~(Qi)~~ and a ratio ($Qxx / (Qi - Qt'')$ or $Qxx / (Qi - Qt)$) of ~~a~~ the total basis unknown steam amount ~~(Qxx)~~ relative to a value (($Qi - Qt''$) or ($Qi - Qt$)) obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total receiving steam amount ~~(Qi)~~ as ~~an~~ the unknown steam ratio ~~(Kx = Qx / Qi)~~ and an improved unknown steam ratio ($Kxx = (Qxx / (Qi - (Qx - Qxx)) = (Qx - Qt'') / (Qi - Qt'')$ or ($Qx - Qt$) / ($Qi - Qt$)), respectively, said total basis unknown steam amount ($Qxx = (Qx - Qt'')$ or ($Qx - Qt$)) being a value obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total unknown steam amount ~~(Qx)~~; or

calculating ~~a~~ the ratio ~~(Qx / Qi)~~ of the total unknown steam amount ~~(Qx)~~ relative to the total receiving steam amount ~~(Qi)~~ and ~~a~~ the ratio ~~(Qxx / Qi)~~ of ~~a~~ the total basis unknown steam amount ~~(Qxx)~~ relative to the total receiving steam amount ~~(Qi)~~ as ~~an~~ the unknown steam ratio ~~(Kx = Qx / Qi)~~ and an apparent improved unknown steam ratio ($Kxx'' = Qxx / Qi = (Qx - Qt'') / Qi$ or ($Qx - Qt$) / Qi), respectively, said total basis unknown steam amount ($Qxx = (Qx - Qt'')$ or ($Qx - Qt$)) being a value obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total unknown steam amount (Qx).

Claim 5 (Cancelled)

Claim 6 (Currently Amended): The method ~~of operating an aggregating system for system diagnosis~~ according to claim 4, wherein the method further comprises the

step of performing a data generating step based on the calculation results of the calculating means, by a data generating means included in the aggregating system for system diagnosis for generating evaluation data having contents indicative of at least the total unknown steam amount (Qx) and the improvable unknown steam ratio $(Kts = (Qx - Qxx) / Qx)$ or evaluation data having contents indicative of at least the total trap-passed steam loss amount $(Qt'' \text{ or } Qt)$, the sum total steam loss amount $(Qts = (Qt'' + Qs) \text{ or } (Qt + Qs))$ and the improvable unknown steam ratio $(Kts = (Qx - Qxx) / Qx)$ or evaluation data having contents indicative of at least the unknown steam ratio $(Kx = Qx / Qi)$ and the improved unknown steam ratio $(Kxx = (Qxx / (Qi - (Qx - Qxx)))$ or evaluation data having contents indicative of at least the unknown steam ratio $(Kx = Qx / Qi)$ and the apparent improved unknown steam ratio $(Kxx' = Qxx / Qi)$.

Claim 7 (Currently Amended):   An aggregating system for use with ~~system~~ diagnos~~is~~ing a system, the system comprising:

inputting means for receiving input from a trap diagnotor of result of a trap operation diagnosis performed by the trap diagnotor for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping and inputs of a total receiving steam amount (Qi) and a total necessary steam amount (Qo) of the evaluation target steam piping or an input of a total unknown steam amount ($Qx = Qi - Qo$) which is a difference between the total receiving steam amount (Qi) and the total necessary steam amount (Qo) and is a total steam loss amount in the evaluation target steam piping;

calculating means for calculating, based on the trap operation diagnosis result inputted to the inputting means, a total trap-passed steam loss amount (Qt'' or Qt) obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps;

based on the total receiving steam amount (Qi) and the total necessary steam amount (Qo) or the total unknown steam amount (Qx) inputted to the inputting means, said calculating means further configured to:

calculate a ratio (Qt'' / Qx or Qt / Qx) of the total trap-passed steam loss amount (Qt'' or Qt) relative to the total unknown steam amount (Qx) which is the difference between the total receiving steam amount (Qi) and the total necessary steam amount (Qo) as an improvable unknown steam ratio (Kts = (Qx – Qxx) / Qx = Qt'' / Qx or Qt / Qx); or

calculate a ratio (Qx / Qi) of the total unknown steam amount (Qx) relative to the total receiving steam amount (Qi) and a ratio ($Qxx / (Qi - Qt'')$ or $Qxx / (Qi - Qt)$) of a total basis unknown steam amount (Qxx) relative to a value ($Qi - Qt''$ or $Qi - Qt$) obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total receiving steam amount (Qi) as an unknown steam ratio ($Kx = Qx / Qi$) and an improved unknown steam ratio ($Kxx = Qxx / (Qi - (Qx - Qxx)) = Qxx / (Qi - Qt'')$ or $Qxx / (Qi - Qt)$), respectively, said total basis unknown steam amount ($Qxx = Qx - Qt''$ or $Qx - Qt$) being a value obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total steam amount (Qx); or

calculate a ratio (Qx / Qi) of the total unknown steam amount (Qx) relative to the total receiving steam amount (Qi) and a ratio (Qxx / Qi) of a total basis unknown steam amount (Qxx) relative to the total receiving steam amount (Qi) as an unknown steam ratio ($Kx = Qx / Qi$) and an apparent improved unknown steam ratio ($Kxx' = Qxx / Qi = (Qx - Qt'') / Qi$ or $(Qx - Qt) / Qi$), respectively, said total basis unknown steam amount ($Qxx = (Qx - Qt'')$ or $(Qx - Qt)$) being a value obtained by subtracting the total trap-passed steam loss amount (Qt'' or Qt) from the total unknown steam amount (Qx).

Claim 8 (Currently Amended): An aggregating system for use with ~~system~~ diagnos~~is~~ing a system, the system comprising:

inputting means for receiving, from a trap diagnotor and a leakage diagnotor respectively, inputs of results of a trap operation diagnosis performed by the trap diagnotor for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping and a steam leakage diagnosis performed by the leakage diagnotor for diagnosing steam leakage from respective piping portions of the evaluation target steam piping and inputs of a total receiving steam amount (Qi) and a total necessary steam amount (Qo) of the evaluation target steam piping or an input of a total unknown steam amount ($Qx = Qi - Qo$) which is a difference between the total receiving steam amount (Qi) and the total necessary steam amount (Qo) and is a total steam loss amount in the evaluation target steam piping;

calculating means for calculating

based on the result of the trap operation diagnosis inputted to the inputting means, a total trap-passed steam loss amount (Qt'' or Qt) obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps;

based on a result of the steam leakage diagnosis inputted to the inputting means, a total steam leakage loss amount (Qs) obtained by aggregating steam leakage loss amounts from the respective piping portions for the entire evaluation target steam piping;

whererein the calculating means are further configured, based on the total receiving steam amount (Qi) and the total necessary steam amount (Qo) or the total unknown steam amount (Qx) inputted to the inputting means, to:

calculate a ratio (Qts / Qx) of a sum total steam loss amount (Qts = (Qt" + Qs) or (Qt + Qs)) relative to the total unknown steam amount (Qx) which is the difference between the total receiving steam amount (Qi) and the total necessary steam amount (Qo) as an improvable unknown steam ratio (Kts = (Qx – Qxx) / Qx = Qts / Qx = (Qt" + Qs) / Qx or (Qt + Qs) / Qx), said sum total steam loss amount (Qts = (Qt" + Qs) or (Qt + Qs)) being a sum of the total trap-passed steam loss amount (Qt" or Qt) and the total steam leakage loss amount (Qs), or;

calculate a ratio (Qx / Qi) of the total unknown steam amount (Qx) relative to the total receiving steam amount (Qi) and a ratio (Qxx / (Qi – Qts) of a total basis unknown steam amount (Qxx) relative to a value (Qi – Qts) obtained by subtracting the sum total steam loss amount (Qts) from the total receiving steam amount (Qi) as an unknown steam ratio (Kx = Qx / Qi) and an improved unknown steam ratio (Kxx = (Qxx / (Qi – (Qx – Qxx)) = Qxx / (Qi – Qts) = (Qx – (Qt" + Qs)) / (Qi – (Qt" + Qs)) or (Qx – (Qt + Qs)) / (Qi – (Qt + Qs))), respectively, said total basis unknown steam amount (Qxx = Qx – Qts = Qx – (Qt" + Qs) or Qx – (Qt + Qs) being a value obtained by subtracting the sum total steam loss amount (Qts = (Qt" + Qs) or (Qt + Qs)) from the total unknown steam amount (Qx); or

calculate a ratio (Qx / Qi) of the total unknown steam amount (Qx) relative to the total receiving steam amount (Qi) and a ratio (Qxx / Qi) of a total basis unknown steam amount (Qxx) relative to the total receiving steam amount (Qi) as an unknown steam ratio (Kx = Qx / Qi) and an apparent improved unknown steam ratio (Kxx' = Qxx / Qi = (Qx – (Qt" + Qs)) / Qi or (Qx – (Qt + Qs)) / Qi), respectively, said total basis unknown steam amount (Qxx = Qx – Qts = Qx – (Qt" + Qs) or Qx – (Qt + Qs)) being a value obtained by subtracting the sum total steam loss amount (Qts = (Qt" + Qs) or (Qt + Qs)) from the total unknown steam amount (Qx).

Claim 9 (Currently Amended): The aggregating system for system diagnosis according to claim 7, wherein the method further comprises data generating means for generating, based on the calculation results of the calculating means, evaluation data having contents indicative of at least the total unknown steam amount (Qx) and the improvable unknown steam ratio $(Kts = (Qx - Qxx) / Qx)$ or evaluation data having contents indicative of at least the total trap-passed steam loss amount $(Qt'' \text{ or } Qt)$, the sum total steam loss amount $(Qts = (Qt'' + Qs) \text{ or } (Qt + Qs))$ and the improvable unknown steam ratio $(Kts = (Qx - Qxx) / Qx)$ or evaluation data having contents indicative of at least the unknown steam ratio $(Kx = Qx / Qi)$ and the improved unknown steam ratio $(Kxx = (Qxx / (Qi - (Qx - Qxx)))$ or evaluation data having contents indicative of at least the unknown steam ratio $(Kx = Qx / Qi)$ and the apparent improved unknown steam ratio $(Kxx' = Qxx / Qi)$. ·